

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/13792

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> C07C317/14, 317/18, 317/24, 317/28, 317/44, C07C323/09, 323/65, C07F7/18, A61K31/10, 31/12, A61K31/192, 31/216, 31/235, 31/255, 31/27, A61K31/351, 31/40, 31/4402

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> C07C317/14, 317/18, 317/24, 317/28, 317/44, C07C323/09, 323/65, C07F7/18, A61K31/10, 31/12, A61K31/192, 31/216, 31/235, 31/255, 31/27, A61K31/351, 31/40, 31/4402

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
REGISTRY (STN), CA (STN)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SKARZEWSKI, J., Simple preparation of enantiometric Michael adducts of thiophenol to chalcones, Tetrahedron: Asymmetry, 30 July, 2001 (30.07.01), Vol.12, No.13, pages 1923 to 1928	1-8
X	ISHIBASHI, Hiroyuki, Lewis acid-promoted alkylations of arenes and 1-trimethylsilylalkynes with $\beta$ -chloro-	1-8
X	$\beta$ -thiopropionic esters, Chemical & Pharmaceutical Bulletin, 1991, Vol.39, No.5, pages 1148 to 1151  DE 4215437 A1 (Germany), 18 November, 1993 (18.11.93), (Family: none)	1-8

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
11 April, 2003 (11.04.03)

Date of mailing of the international search report  
06 May, 2003 (06.05.03)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
4 X	KARAVAN, V.S., Ioselectivity relation in the halophilic reaction of $\alpha$ -chlorodesyl aryl sulfones with sodium thiophenolate, Zhurnal Organicheskoi Khimii, 1989, Vol.25, No.5, pages 905 to 910	1-8
5 X	JP 62-39563 A (Hokko Chemical Industry Co., Ltd.), 20 February, 1987 (20.02.87), (Family: none)	1-8
6 X	US 4675316 A (Rohm and Haas Co.), 23 June, 1987 (23.06.87), (Family: none)	1-8
7 X	MUEHLSTAEDT, M., Cyclization reactions of $\beta,\gamma$ -unsaturated derivatives of carbonic acid, Journal fuer Praktische Chemie, 1986, Vol.328, No.3, pages 309 to 313	1-8
8 X	EP 153657 A1 (Hoechst AG.), 04 September, 1985 (04.09.85), & JP 60-202868 A	1-8
9 X	EP 117485 A2 (Hoffmann-La Roche), 05 September, 1984 (05.09.84), & JP 59-172470 A	1-8
10 X	FR 2509725 A1 (Choay S.A.), 21 January, 1983 (21.01.83), (Family: none)	1-8
11 X	EP 46658 A2 (Sumitomo Chemical Industries Ltd.), 03 March, 1982 (03.03.82), & JP 57-40475 A & US 4379921 A	1-8
12 X	FOURNIER, Jean Paul, Hypolipemic activity of 2-hydroxyalkyl and 3-hydroxyalkyl phenyl sulfones., European Journal of Medicinal Chemistry, 1982, Vol.17, No.1, pages 53 to 58	1-8
13 X	EP 752 A2 (BASF A.-G.), 21 February, 1979 (21.02.79), & JP 54-30174 A	1-8
14 X	EP 112 A1 (BASF A.-G.), 20 December, 1978 (20.12.78), & DE 2724684 A1	1-8
15 X	US 4116665 A (Lilly, Eli, and Co.), 26 September, 1978 (29.09.78), & GB 1595261 A	1-8
16 X	US 4157399 A (Parcor), 05 June, 1979 (05.06.79), & JP 53-84962 A	1-8

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
17 X	WALKER, Keith A.M., A convenient preparation of thioethers from alcohols, Tetrahedron Letters, 1977, No.51, pages 4475 to 4478	1-8
18 X	GB 1554299 A (American Cyanamid Co.), 17 October, 1979 (17.10.79), & JP 52-39647 A	1-8
19 X	US 4055652 A (Syntex, Inc.), 25 October 1977 (25.10.77), & JP 51-57828 A	1-8
20 X	LAPKIN, I.I., Reactions of halo metal alcoholates, Khimiya Geterotsiklicheskikh Soedinenii, 1968, No.1, pages 53 to 57	1-8
21 X	PANTELEIMONOV, A.V., Addition of nucleophilic agents to 1-aryl-2-trifluoro-methylsulfonylethylenes, Zhurnal Obshchei Khimii, 1966, Vol.36, No.11, pages 1976 to 1980	1-8
22 X	WRAGG, A.H., Rearrangement of sulfinic esters, J. Chem.Soc., 1958, pages 3603 to 3605	1-8
23 X	CRANHAM, J.E., Toxicity of organic sulfides to the eggs and larvae of the two-spotted spider mite, J.Sci.Food Agr., 1958, Vol.9, pages 147 to 150	1-8
24 A	WO 98/38156 A1 (Takeda Chemical Industries, Ltd.), 03 September, 1998 (03.09.98), & JP 11-80098 A & US 2002/32189 A1 & EP 971878 A1	1-15
25 A	JP 9-95444 A (Teijin Ltd.), 08 April, 1997 (08.04.97), (Family: none)	1-15
26 E, X	WO 03/18543 A1 (Merck Sharp & Dohme Ltd.), 06 March, 2003 (06.03.03), (Family: none)	1-15
27 P, X	WO 02/81435 A1 (Merck Sharp & Dohme Ltd.), 17 October, 2002 (17.10.02), (Family: none)	1-15
28 P, X	WO 02/81433 A1 (Merck Sharp & Dohme Ltd.), 17 October, 2002 (17.10.02), (Family: none)	1-15

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International application No.

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Continuation of A. CLASSIFICATION OF SUBJECT MATTER

(International Patent Classification (IPC))

Int.Cl<sup>7</sup> A61K31/4406, 31/4409, 31/47, A61K31/695, A61P25/28, 43/00,  
C07D215/12, 295/08, C07D295/20, 309/08, 311/56, 309/04,  
A61K31/352, 31/495, 31/5375, C07D277/26, 277/70, 277/24,  
A61K31/426, 31/428, 31/166, 31/277, C07D263/32, A61K31/421,  
C07D263/20, A61K31/18, C07D235/28, C07D405/12, 401/12, 405/04,  
413/06, C07D413/04, 413/10, 417/12, 409/12, C07D413/12,  
401/04,  
213/32, 213/34, C07D207/333, 239/26, 307/38, C07D405/06,  
A61K31/4433, C07D401/06, A61K31/4545, C07D333/18, A61K31/381,  
C07D335/02, A61K31/382, 31/4436, A61K31/5377, 31/4439, 31/506,  
C07D319/06, A61K31/357

(According to International Patent Classification (IPC) or to both  
national classification and IPC)

Continuation of B. FIELDS SEARCHED

Minimum Documentation Searched (International Patent Classification  
(IPC))

Int.Cl<sup>7</sup> A61K31/4406, 31/4409, 31/47, A61K31/695, A61P25/28, 43/00,  
C07D215/12, 295/08, C07D295/20, 309/08, 311/56, 309/04,  
A61K31/352, 31/495, 31/5375, C07D277/26, 277/70, 277/24,  
A61K31/426, 31/428, 31/166, 31/277, C07D263/32, A61K31/421,  
C07D263/20, A61K31/18, C07D235/28, C07D405/12, 401/12, 405/04,  
413/06, C07D413/04, 413/10, 417/12, 409/12, C07D413/12,  
401/04,  
213/32, 213/34, C07D207/333, 239/26, 307/38, C07D405/06,  
A61K31/4433, C07D401/06, A61K31/4545, C07D333/18, A61K31/381,  
C07D335/02, A61K31/382, 31/4436, A61K31/5377, 31/4439, 31/506,  
C07D319/06, A61K31/357

Minimum documentation searched (classification system followed by  
classification symbols)

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International application No.

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## Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 16, 17

because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 16 and 17 pertain to methods for treatment of the human body by therapy and thus relates to a subject matter which this International Searching Authority is not required, under the provisions of Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.

2. ☐ Claims Nos.:

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.